

REMARKS

Claims 1-15 are pending. Claims 1-15 were rejected under 35 U.S.C. 103(a) as being unpatentable over Lenihan (6,169,843) in view of Schneier. Although the Examiner did not identify the reference associated with Schneier, the Applicants believe the Examiner is referring to Applied Cryptography: Protocols, Algorithms, and Source Code in C, Second Edition by Bruce Schneier (ISBN: 0471117099).

The Examiner argues that Lenihan describes modifying the PCR by changing each of the six bytes so that each byte has a least significant bit equal to zero. The Examiner argues that Schneier describes including a timestamp in a digital signature. The Examiner argues that it would be obvious to combine the references. The Applicants respectfully disagree that it would be obvious to combine the references to teach or suggest “logically anding off a portion of the lower bits of said PCR field, said PCR field including time stamp information, and replacing said portion with all or a part of said digital signature.”

The Applicants agree that Lenihan describes modifying “the PCR information as shown in FIG 3B such that each of the six bytes in the ATS has a least significant bit (LSB) equal to zero.” However, the PCR modification in Lenihan has nothing to do with digital signatures, encryption, or cryptography. Lenihan modifies the PCR to make the least significant bits zero “to prevent confusion with the MPEG-2 sync byte value.” Lenihan in fact teaches away from providing a digital signature in the PCR field, because a digital signature would necessarily include one bits as well as zero bits in the least significant bit field. Adding a digital signature would tend to increase confusion “with the MPEG-2 sync byte value” because the least significant bits would not all be zero. Consequently, Lenihan actually teaches away from using the PCR field to provide a digital signature.

Schneier similarly does not teach or suggest replacing a portion of the PCR field with a digital signature. Schneier states that a “digital signature often include timestamps.” However, Schneier does not teach or suggest replacing a PCR field which may include time stamp information with a digital signature. According to claim 1, time stamp information included in the PCR field may in fact be lost when a portion of the PCR field is replaced with the digital signature. Schneier tends to teach away from this removal of time stamp information and instead encourages providing time stamp information. Consequently, it is believed that Schneier also

teaches away from replacing a portion of the PCR field with a digital signature. Both references cited by the Examiner are believed to teach away from replacing a portion of the PCR field with all or part of a digital signature as recited in the claims. Both references do not provide motivation to replace a portion of the PCR field with digital signature information.

The techniques and mechanisms of the present invention recognize that the PCR field or a portion of the PCR field is particularly and uniquely suitable for replacement by a digital signature. No references cited by the Examiner or any other references are believed to suggest that the PCR field or a portion of the PCR field should be replaced with a digital signature. The Applicants analyzed, contemplated, and studied a variety of ways to insert a digital signature. The Applicants also created criteria for evaluating different fields for replacement. The Applicants considered the Adaptation, the Descriptor, the Separate PID, Null, Table CRC, Table Replacement, PCR, User Data, PTS/DTS, User Data Field, Residuals, Extra Data, Private/User Bit field and recognized unique benefits to using the PCR field. Some of the benefits and drawbacks are provided on page 6-11 of the present application and summarized in Table 1 on page 12 of the present application also provided below.

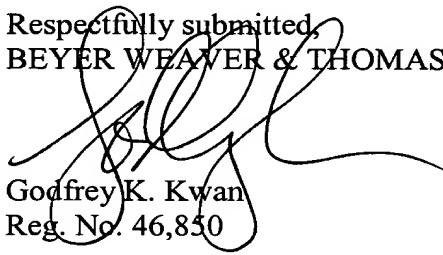
Table 1

| | Transport Stream | | | | | | | PES Layer | Video Elementary | | | Audio Elementary | |
|--|------------------|------------|--------------|------|-----------|-------------------|-----|-----------|------------------|-----------------|-----------|------------------|-------------------|
| | Adaptation field | Descriptor | Separate PID | NULL | Table CRC | Table Replacement | PCR | User Data | PTS/DTS | User Data Field | Residuals | Extra Data | Private/User Bits |
| Requires Transport Stream Pre-Processing to create 'space' in the bitrate. | Y | Y | Y | N | N | N | N | Y | N | Y | Y | N | N |
| Resilient to a remultiplexing operation | N | N | N | N | N | N | N | Y | N | Y | Y | Y | Y |
| Triggers an error in the stream | N | N | N | N | Y | Y | N | N | N | N | N | N | N |
| Ease of Insertion 1- trivial 2- easy 3- difficult | 3 | 3 | 2 | 1 | 2 | 2 | 1 | 3 | 2 | 3 | 3 | 2 | 2 |
| Ease of detection of information 1- easy and visible 2- not immediately evident 3- not detectable | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 1 | 3 | 2 | 3 | 2 | 3 |
| Data rate supported (bits per second) | 10k | 1k | 100k | 10k | 100 | 1k | 100 | 1k | 100 | 1k | 10k | 1k | 100 |

For example, to include a digital signature in certain non PCR fields would require transport stream preprocessing and could trigger errors in the stream. The detection of the digital signature information is recognized by the techniques of the present invention as undesirable and may be easy in non PCR fields. The Data rate supported may be low or the digital signature would be difficult to insert. Based on Applicant insight, the techniques and mechanisms of the present invention recognize the unique benefits of replacing a portion of the PCR field with digital signature information.

In light of the above remarks relating to independent claims, the remaining dependent claims are believed allowable for at least the reasons noted above. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,
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